



## **Summary of Fishery Surveys Mason & Evergreen Lakes, Sawyer County, 2011-2012**

WDNR's Fisheries Management Team from Park Falls completed fyke netting and electrofishing surveys in 2011-2012 to assess the status of important fish populations in Mason and Evergreen lakes. Fyke nets set in early October 2011 targeted black crappie. Fyke nets set shortly after the spring thaw targeted walleye, muskellunge, and yellow perch. An electrofishing survey on May 15, 2012 documented the abundance and size structure of smallmouth bass and bluegill populations. The incidental catch of bluegill in spring and fall fyke nets complemented our understanding of these populations. Quality, preferred, and memorable sizes referenced in this summary are based on standard proportions of world record lengths developed for each species by the American Fisheries Society. "Keeper size" is our own description applied to black crappie and yellow perch  $\geq 9$  inches and bluegill  $\geq 7$  inches, based on observed angler behavior.

### **Survey Effort**

On October 2, 2011 we set four fyke nets in Mason Lake and four in Evergreen Lake and fished them overnight for two nights (eight net-nights of sampling effort per lake) when water temperature was 59–60°F. We set four fyke nets in each lake again on March 29, 2012 and fished them overnight for three nights (12 net-nights per lake) at water temperatures 43–45°F. Comparing measured water temperature with the optimal spawning temperature range of the target species, our spring fyke netting occurred during the peak spawning activity of muskellunge and after that of perch and walleye. An early ice-out followed by weeks of cold weather may have disrupted the spawning behavior of targeted species and reduced sample sizes in our early spring nets. With water temperature 64–65°F our May 15<sup>th</sup> electrofishing survey was well-timed to capture spawning smallmouth bass and bluegill and represent their population relative abundance and size structure. On Mason Lake we sampled 2.00 miles of shoreline in 1.42 hours, including a half-mile station where we dipped all fish species in 0.38 hour. We sampled 2.00 shoreline miles in Evergreen Lake in 1.55 hours, including a half-mile segment sampled for all species in 0.42 hour.

### **Habitat Characteristics**

Located within the Flambeau River State Forest about 10 miles west of Fifield, Wisconsin, 190-acre Mason Lake and 200-acre Evergreen Lake are drainage lakes connected by a shallow, navigable channel. An unnamed tributary drains from Swamp Lake into Mason Lake, and Mason Creek flows about 1.3 miles from Mason Lake to the North Fork Flambeau River. Mason Lake has low turbidity and moderately clear water (average Secchi depth=9 feet), even though dissolved organic compounds bring about its tea-colored stain. Its maximum depth is 39 feet, and the average depth is 17 feet. The bottom substrate is made up of 60% sand, 5% gravel, and 35% muck. Evergreen Lake has noticeably different

characteristics. Evergreen Lake is moderately clear in early spring, but as summer progresses water clarity decreases as severe algae blooms produce the turbidity and the pea-green color that inspired a name change from Round Lake to Evergreen Lake. The average late summer secchi depth reading is 6 feet. The maximum depth in Evergreen Lake is 25 feet, and the average depth is 12 feet. The bottom substrate is 40% sand, 55% gravel, and 5% muck. Together, the pair of lakes has 5.7 miles of shoreline. Except for a few scattered dwellings, nearly all shorelands are forested, publically owned, and managed within the State Forest's Scenic Lake Management Zone to maintain their natural aesthetics and generally undeveloped landscape for long-term public enjoyment. WDNR maintains a boat landing with minimal improvement at the outlet of Mason Lake near the end of Snuss Boulevard. The Township of Draper's 1981 ordinance limits the size of motors used on Mason Lake to 15 horsepower or less.

## Summary of Results

Species richness and fish community composition was similar in both lakes. Netting and electrofishing captured 13 fish species in 2011 and 2012, compared to 15 species and one hybrid collected by fyke nets, fine-mesh mini fyke nets, and electrofishing in June and August 2005. Walleye and muskellunge are the co-dominant predators in the fish community. Northern pike remained absent in all these surveys, despite the unimpeded connection to the pike population in the North Fork Flambeau River nearby. Only three largemouth bass 5.1-5.8 inches long were in the fall netting bycatch. In contrast, netting surveys in mid-May 1950 found largemouth bass ages 3-11 in Evergreen Lake and ages 4-8 in Mason Lake, prior to the only recorded stocking of 900 largemouth bass fingerlings into Mason Lake and 320 into Evergreen Lake in 1951 and 1953. Those survey reports and another from 1937 listed no smallmouth bass or northern pike and described "fishing mainly for largemouth bass and muskellunge rather good at times."

### Walleye

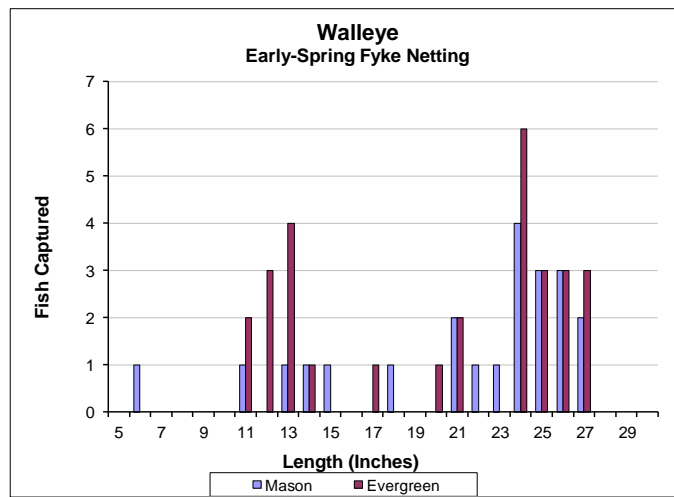


#### WDNR Early Spring 2012 Fyke Netting

	Number per net-night $\geq 10"$	Quality Size $\geq 15"$	Preferred Size $\geq 20"$	Memorable Size $\geq 25"$
Mason	1.8	86%	76%	38%
Evergreen	2.4	66%	62%	31%
Combined	2.1	74%	68%	34%

#### GLIFWC Early Spring 2014 Electrofishing

	Quality Size $\geq 15"$	Preferred Size $\geq 15"$	Memorable Size $\geq 15"$
Mason	12%	3%	2%
Evergreen	44%	8%	3%
Combined	24	5%	3%



Low capture rates of adult walleye in early spring 2012 fyke nets confirmed our suspicion that the late timing of this survey missed the peak of walleye spawning activity. In a better-timed 2014 survey the Great Lakes Indian Fish & Wildlife Commission estimated walleye population densities of 6.3 adults per acre in Mason Lake and 4.9 adults per acre in Evergreen Lake. Based on GLIFWC's results, the walleye population is meeting or exceeding our goal of 3-5 adults per acre, outlined in the draft *Flambeau River State Forest Lakes Management Plan* (in preparation).

The size structure of the walleyes in WDNR's spring 2012 fyke nets was excellent. With a wide range of lengths and ages represented, including a higher-than-average share of memorable-size fish, the population far exceeded our objective to have 25-35% of walleyes  $\geq 10$  inches reaching 15 inches or longer. Two years later GLIFWC collected larger samples that likely portray walleye length distribution more realistically, though electrofishing often captures fewer large females than fyke nets do. We believe the population's typical size distribution lies somewhere between the values derived from these imperfect samples.

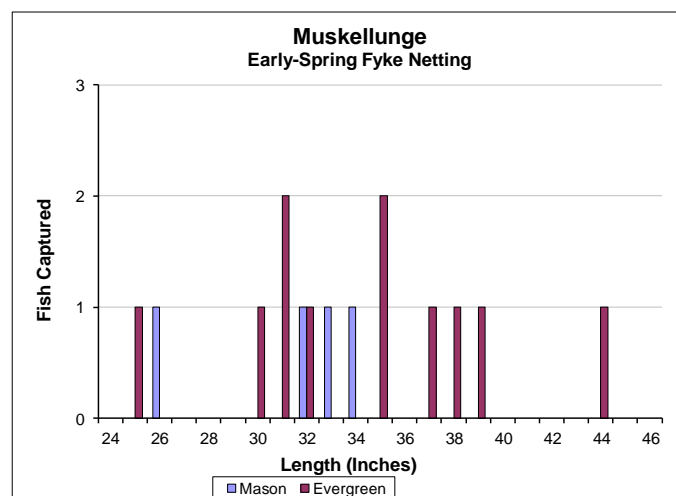
Natural recruitment has maintained the walleye population since walleye stocking ended in 1950. Walleyes expanded from remnant abundance in 1950 to predatory dominance in the fish community, a status first noted in 1985 that still persists today.

Mason and Evergreen lakes have the standard walleye harvest regulation in the Ceded Territory. Anglers may keep a daily bag limit of 3 walleyes. Only walleye from 15 inches but less than 20 inches long may be kept, except one walleye may be over 24 inches. This rule took effect on May 2, 2015.

## Muskellunge



	Number per net-night $\geq 20''$	Quality Size $\geq 30''$	Preferred Size $\geq 38''$	Memorable Size $\geq 42''$
Mason	0.3	75%	0%	0%
Evergreen	0.9	91%	27%	9%
Combined	0.6	87%	20%	7%



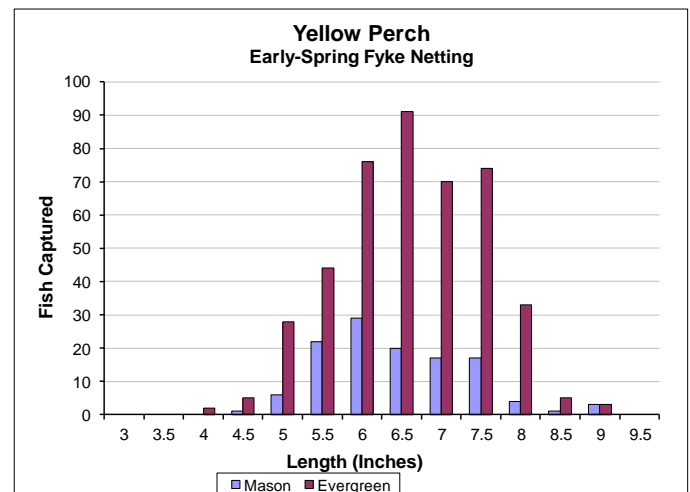
Since stocking of large fingerlings ended in 1990, natural recruitment has sustained the muskellunge population at fishable levels of abundance, probably because northern pike are absent in these small lakes. Elsewhere, in waters where pike and musky share common spawning grounds, the earlier spawning and hatching of pike and their subsequent predation on musky fry is thought to greatly reduce the reproductive success of muskellunge. In small lakes with homogenous habitat, niche partitioning often does not segregate these early life stages enough to dampen their competitive interactions. Our netting samples suggest that muskies are larger and more abundant in Evergreen Lake than in Mason Lake. The fyke net capture rate in Evergreen Lake matched the statewide average rate in waters with naturally reproducing musky populations. Compared to angler reports of fast action on both lakes,

our netting catch rates may have underestimated their true abundance. Despite our small sample sizes, their size structure was considered “fair” for lakes of this size, but the proportion of memorable-size fish fell short of our ambitious goal to have 10-20% at least 42 inches long. Mason and Evergreen are classified as A2 muskellunge waters, meaning that they offer fast fishing action, but big fish make up a small percentage of the total population. Muskellunge fishing follows the Northern Zone regulation with daily limit of one, a 40-inch minimum length, and a 6-month open season. We suspect that most successful musky anglers practice catch-and-release, harvest is negligible, and the fishing regulation has little or no influence on the population’s characteristics.

## Yellow Perch

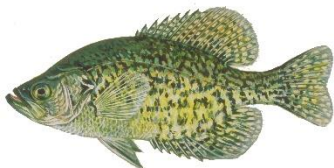


	Number per net-night $\geq 5"$	Quality Size $\geq 8"$	Preferred Size $\geq 10"$
Mason	9.9	7%	0%
Evergreen	35	10%	0%
Combined	23	9%	0%



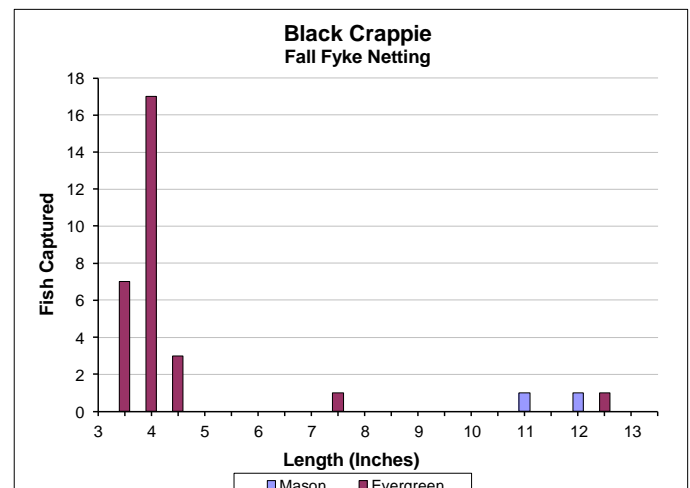
Yellow perch serve as the main food of fish predators in Mason and Evergreen lakes, but anglers would have to work hard to catch a meal of 7- to 8-inch perch. With low proportions of quality- and keeper-size and no preferred-size perch in early spring fyke nets we rated their size structure as “poor.” Catch rates were 3½ times higher in Evergreen Lake than in Mason Lake for reasons we cannot explain. Young perch serve as important forage for walleyes, and strong year class production in the perch population often correlates with strong walleye production. To obtain an efficient ration muskellunge selectively eat the largest perch—a tendency that could explain why most anglers would be disappointed in the size of perch left for them.

## Black Crappie



### Fall Fyke Netting

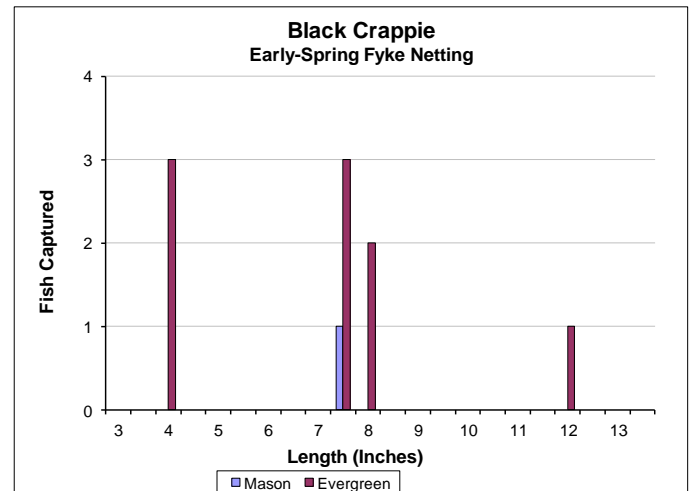
	Number per net-night $\geq 5"$	Quality Size $\geq 8"$	Preferred Size $\geq 10"$	Memorable Size $\geq 12"$
Mason	0.3	100%	100%	50%
Evergreen	0.3	50%	50%	50%
Combined	0.3	75%	75%	50%





### Early-Spring Fyke Netting

	Number per net-night $\geq 5''$	Quality Size $\geq 8''$	Preferred Size $\geq 10''$	Memorable Size $\geq 12''$
Mason	0.1	0%	0%	0%
Evergreen	0.5	50%	17%	17%
Combined	0.3	43%	14%	14%



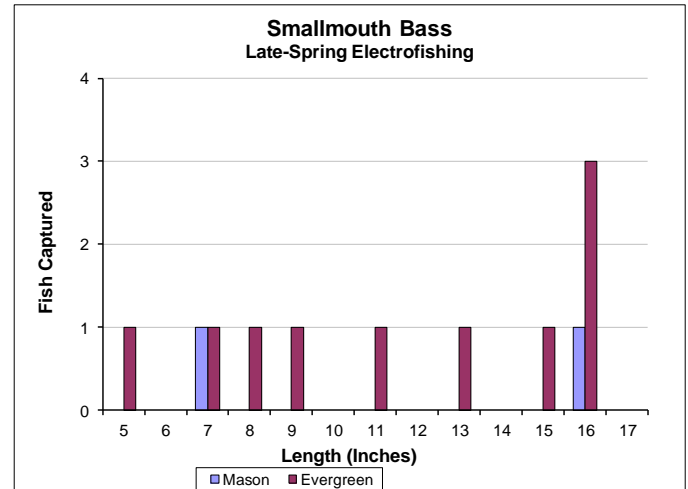
Catch rates in our fall 2011 and early spring 2012 fyke netting surveys indicated very low black crappie abundance. Fyke nets revealed a similar population status in our June 21-23, 2005 survey when they captured 0.4 and 1.6 crappie per net-night in Mason and Evergreen lakes. Crappie numbers in our samples clearly did not meet the goal we set for moderate abundance, measured as 10-20 crappies 5 inches and longer per net-night. Yet, anglers consistently pursue crappies in these waters, especially in winter, without voicing to us their complaints about poor fishing success. Perhaps anglers who fish these waters understand the trade-off between size and number in fish populations, and they enjoy catching fewer, but larger fish. Or, crappies may be more plentiful than our netting surveys lead us to believe. Like the exceptions we noted in a few other waters, crappies in Mason and Evergreen lakes may not be as vulnerable to capture in spring and fall fyke nets set on shoreline points as they are in most lakes and impoundments we manage. Or else, maybe our samples 7 years apart represent low points in fluctuating crappie abundance that results when favorable spring environmental conditions give rise to strong year classes which grow at a satisfactory rate to the sizes that anglers like to keep, and harvest quickly reduces their abundance again. Age estimated from scales revealed the 2011 crappie year class in Evergreen Lake grew to 4.2 inches long in its first summer (range 3.9-4.3; n=8), matching the regional average length at age 1. Single-fish scale samples showed that crappies reached 11.2 inches in 7 years and 12.3 or 12.6 inches long in 8 years. In low abundance crappie growth rate should remain adequate, and survivors of the 2011 year class should attain preferred and memorable sizes and provide good fishing opportunity in 2016 – 2018.

To increase the average length of black crappie and bluegill populations and distribute harvest more equitably among anglers, experimental panfish harvest restrictions took effect April 1, 2016 on these and nearly 100 other Wisconsin lakes enrolled in a controlled study designed to evaluate which of three new panfish harvest regulations was effective and acceptable to anglers. In May and June, anglers may keep 15 panfish, but only 5 of any one species. During the remainder of the season, 25 panfish may be kept. The seasonal harvest restriction is applied individually to Mason and Evergreen lakes. Unless a permanent regulation change is approved, panfish harvest will revert to the statewide daily bag limit of 25 panfish in 2026.

## Smallmouth Bass



	Number per mile $\geq 7''$	Number per hour $\geq 7''$	Quality Size $\geq 11''$	Preferred Size $\geq 14''$	Memorable Size $\geq 17''$
Mason	1.0	1.4	50%	50%	0%
Evergreen	4.5	5.8	67%	44%	0%
Combined	2.8	3.7	64%	45%	0%



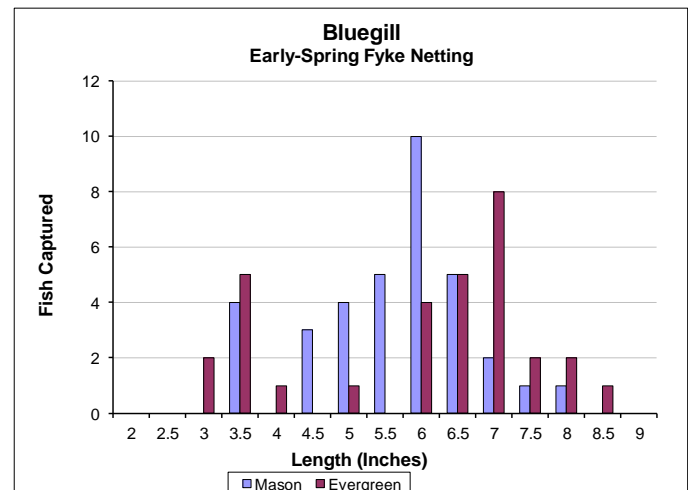
We captured very few smallmouth bass by late spring electrofishing, our chosen method for assessing bass population status. Nonetheless, those samples paired with the incidental catch in fall 2011 fyke nets from Mason Lake ( $n = 8$ ; 6.5–14.5") and Evergreen Lake ( $n = 3$ ; 4.0–16.5") include a broad range of size and age classes, promising signs that in most years smallmouth bass produce a sufficient number of new recruits to maintain low to moderate adult abundance. Both lakes do not seem to have enough large rocky habitat to harbor the crayfish that smallmouth bass prefer to eat and need to thrive at higher population density. Though we found no smallmouth bass of memorable size, six of 23 bass in our combined netting and electrofishing samples were 15.6 – 16.9 inches long.

## Bluegill



### Early-Spring Fyke Netting

	Number per net-night $\geq 3''$	Quality Size $\geq 6''$	Keeper Size $\geq 7''$	Preferred Size $\geq 8''$
Mason	2.9	54%	11%	3%
Evergreen	2.6	71%	42%	10%
Combined	2.8	62%	26%	6%

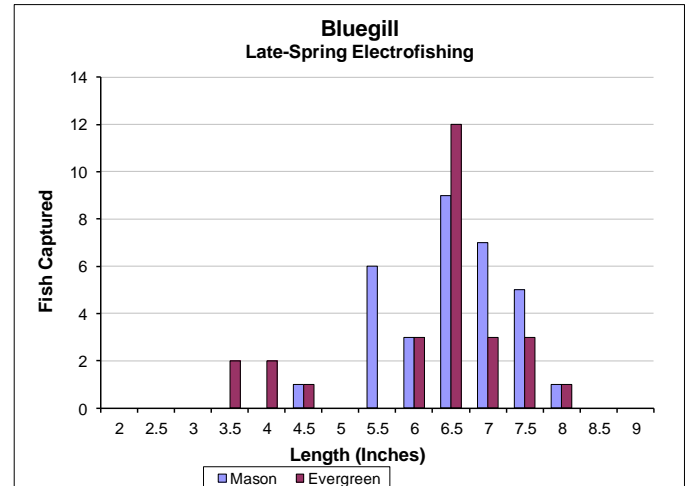






### Late-Spring Electrofishing

	Number per mile $\geq 3''$	Number per hour $\geq 3''$	Quality Size $\geq 6''$	Keeper Size $\geq 7''$	Preferred Size $\geq 8''$
Mason	64	84	78%	41%	3%
Evergreen	54	65	81%	26%	4%
Combined	59	74	80%	34%	3%



The low electrofishing catch rates in our spring surveys point to the moderately low bluegill abundance that gives rise to the respectable, yet underperforming population size structure in both lakes. One in three bluegills in our combined sample was 7 inches or longer, but the shares of preferred-size fish fell somewhat short of our goal to have 5-10% of bluegill  $\geq 3$  inches at least 8 inches long. Walleye and other predators appear to be effective at controlling bluegill abundance, so that bluegills can grow at a satisfactory rate. Though we have no information on harvest, we suspect that anglers are selectively keeping the largest bluegills. We hope that the seasonal restriction on panfish harvest now in effect (described above), or another of the three experimental panfish harvest regulations now being tested, will serve to protect spawning panfish when they are most vulnerable to angling, reduce harvest of the largest bluegills, and increase the average length and the percentage of preferred-size fish in the bluegill population.

Written by: Chad Leanna—Fishery Technician, February 2017.

Edited by: Jeff Scheirer—Fishery Biologist, March 2017.

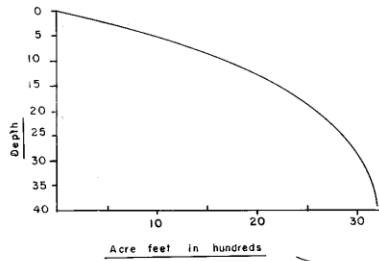
Reviewed by: Steve Gilbert—Woodruff Field Unit Supervisor, January 25, 2018.

Approved for web posting by: Mike Vogelsang—Northern Administrative District Supervisor, January 29, 2018.

## LAKE SURVEY MAP

MASON  
LAKESAWYER  
COUNTY

SEC. 35, 36 T. 38, 39 N. R. 3 E.W.

FLAMBEAU RIVER STATE  
FOREST

B.M. "X" spike in White  
Pine N. of landing 10'  
from shore  
Assumed Elev. 100.00'  
Water Elev. 95.00'

EQUIPMENT RECORDING SONAR MAPPED AUG. 1964  
MO. YR.

TOPOGRAPHIC SYMBOLS		LAKE BOTTOM SYMBOLS	
(B) Brush	Steep slope	P. Peat	Gr. Gravel
(PW) Partially wooded	--- Indefinite shoreline	Mk. Muck	R. Rubble
(W) Wooded	--- Marsh	C. Clay	Br. Bedrock
(C) Cleared	o Spring	M. Marl	T. Submergent vegetation
(P) Pastured	--- Intermittent stream	Sd. Sand	E. Emergent vegetation
(A) Agricultural	--- Permanent inlet	St. Silt	F. Floating vegetation
B.M. Bench Mark	--- Permanent outlet		
Dwelling	--- Dam		
Resort			

WATER ELEV. 95.0'

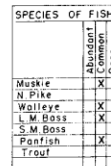
400 0 400 800 1200 1600 2000  
SCALE

◇ Access      ◀ Access with Parking      ◆ Boat Livery  
Field work by: Hopkins, Perkins, Sother. Drawn by: C. Holt

SPECIES OF FISH		
	Abundant	Rare
Muskie	X	
N. Pike	X	
Walleye	X	
L.M. Bass	X	
S.M. Bass	X	
Panfish	X	
Trout	X	

AREA 190 ACRES  
UNDER 3 FT. 6.4 %  
OVER 20 FT. 34 %  
VOLUME 3,178 ACRE FT.  
TOTAL ALK. 65 P.P.M.  
SHORELINE 3.5 MILES  
MAX. DEPTH 39 FEET





AREA 200.0 ACRES  
UNDER 3FT. 9.45 %  
OVER 20FT. 6.9 %  
VOLUME 2376 ACRE FT  
TOTAL ALK. 65 P.P.M  
SHORELINE 22 MILES  
MAX. DEPTH 25 FEET